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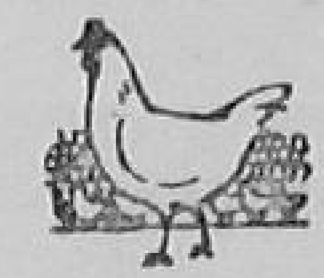

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THE PICTURE ON THE COVER

Water courses in Kerala offer easy transport of coconut husks to farmers' fields. When buried in the soil, the coconut husk improves the soil texture, provides a potassic manure and aids conserve moisture. To many people, it provides a means for earning their livelihood by yielding coir of a very high quality.

Photo by M.G. Kamath

EXTENSION

THE FARM AND FARM HOME MAGAZINE

Vol. II March, 1962 No. 9

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Principal Editor	M.G. Kamath
Editor	T.C. Roy
Associates	Lal Karamchandani
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	Shukla Das
Art Editor	Pratap Deb
Business Manager	R.D. Khanna

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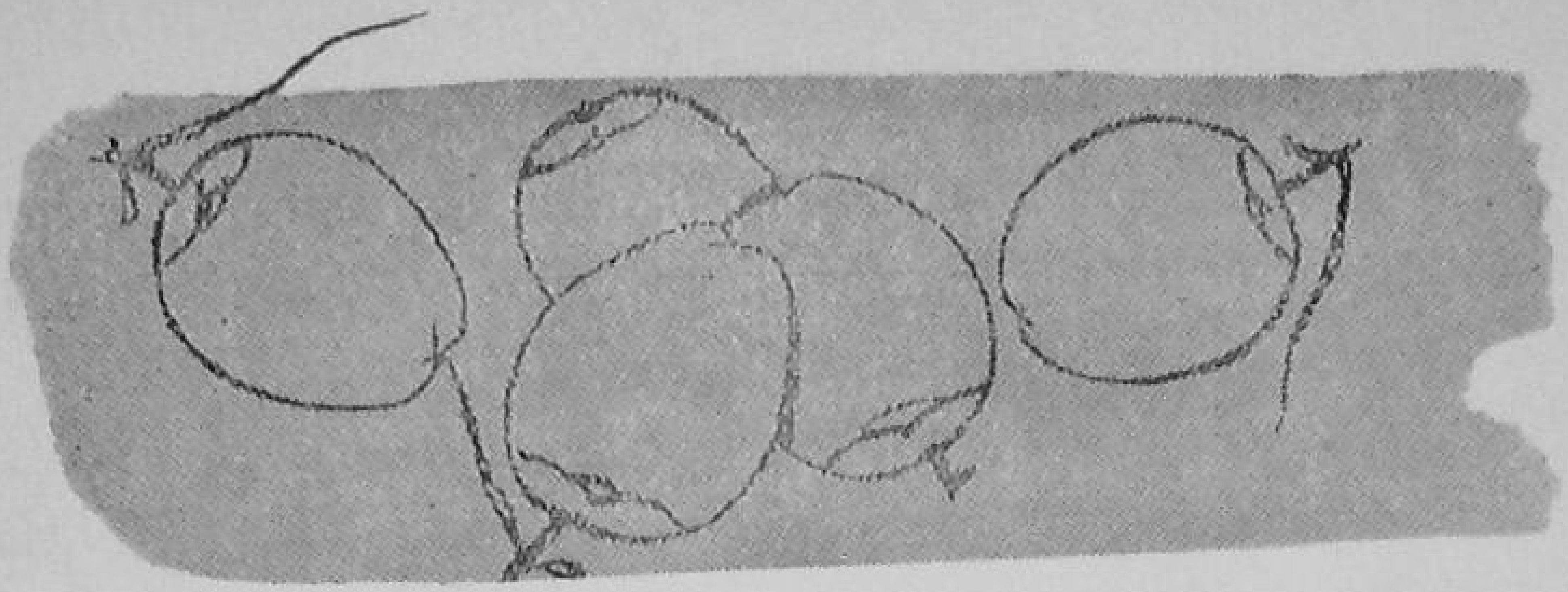
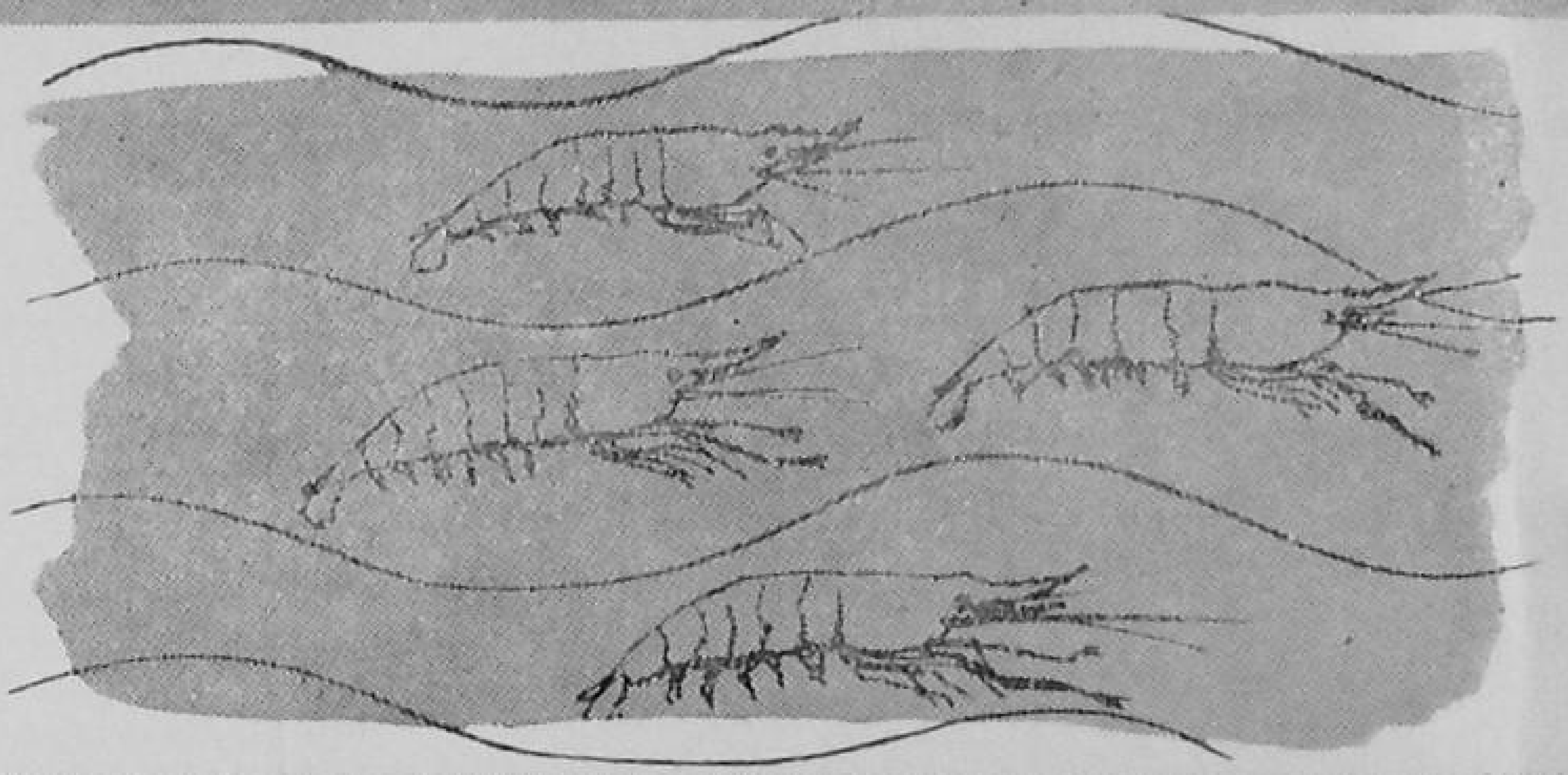




By N. B. NAIR

THE PAYING PADDY-FISH-COCONUT COMBINATION

AN interesting form of mixed cultivation can be found near Paru, in the north-western part of Travancore in Kerala. Paddy, fish, and coconut are being raised from a single holding.

Fields are near the lakes, and the soil, which is almost all clay, turns brackish during the months of October to May. So, only one crop is possible. The bunds, protecting the fields from the lake, are broad and strong

and all along their length are planted with a single row of dwarf coconut trees. No bullock has ever set its feet in the field! The plough, manure, and insecticides are not used at all. Still the farmer gets a handsome profit and plenty of leisure too!

In May, the fields are hacked up and the soil turned using the long-armed *thoompa*, the local version of the shovel. Shallow canals and low bunds are made in the field. The protective bund and spillway are strengthened to withstand the fury of the monsoon.

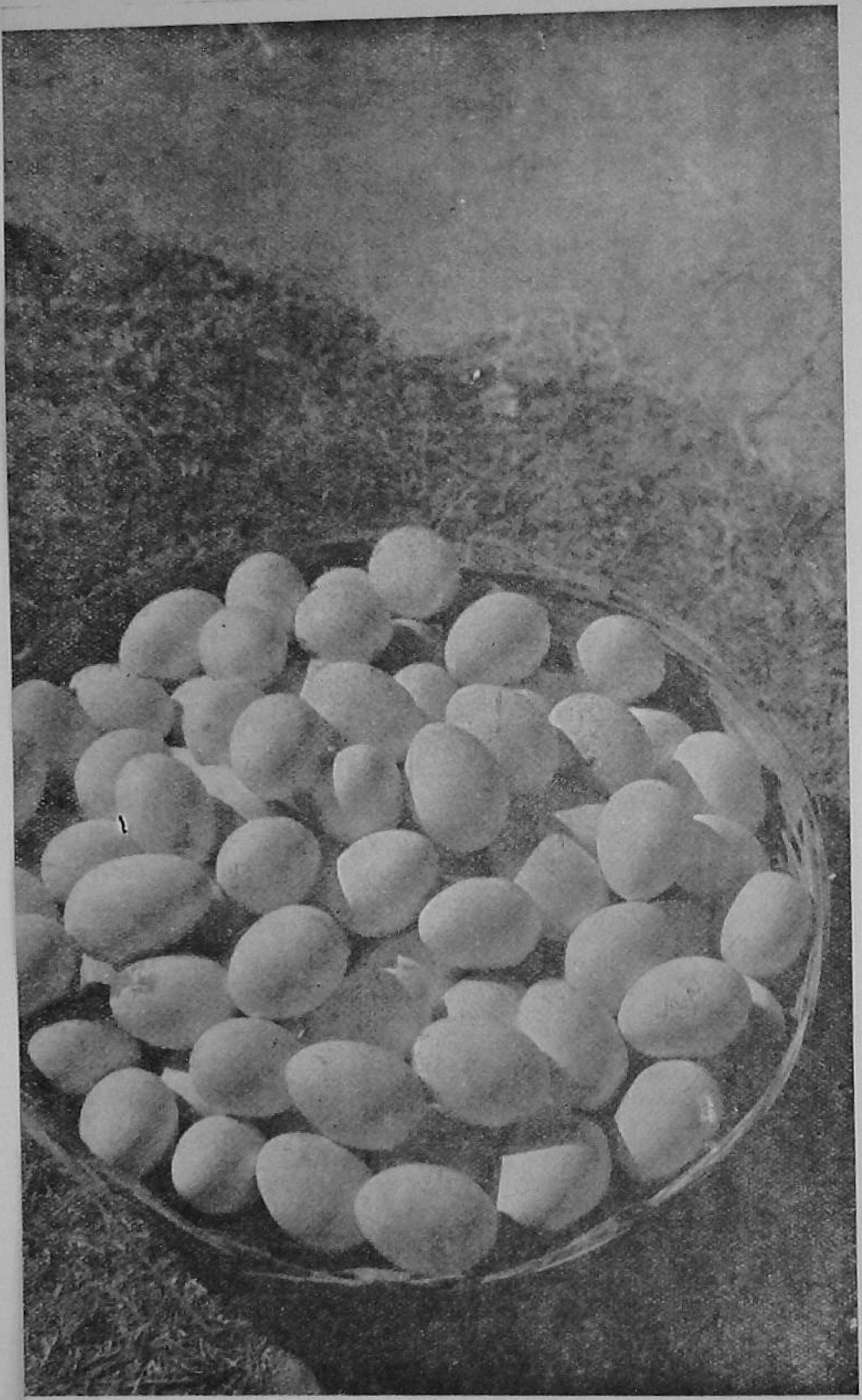
When the first rains of the south-west monsoon leaches out the salinity from the soil, the farmer starts preparing the paddy field for sowing. The only type which thrives under these conditions is the local variety known as '*Pokkali*' in Malayalam. It is a coarse-grained variety. The seed is tied up in baskets woven out of green coconut fronds and plugged up with stocks of plantain leaf. Dozens of such baskets are strung on a coir rope, and dipped in a pond overnight. After two days, the sowing is carried out. The right amount of rainfall is of utmost importance at this stage. Gentle showers of short duration are helpful. But no rain or too much of it, takes a heavy toll of the seedlings.

September-October is the harvest season. The best yield is never more than 1,500-1,800 pounds per acre. It is true that the rice is not very tasty and cows do not like to eat the straw until they are accustomed to it. But then the farmer does not have to own bullocks or buy any manure and insectcides. This kind of paddy is not usually attacked by pests or diseases. A few hired labourers during the preparation of the field, and later for the harvest are all that he needs for his farm.

After this single crop of paddy, the whole farm is turned into a fish-pond. Prawns are plentiful in the lake at this time. The spillway is kept closed till the high tide is at its highest, and then it is opened. Water rushes in, bringing the prawns into the field. The water-gate is then closed up for some days till the fish grow up to proper size. Then, a large net is fixed at the gate. When the low tide reaches the lowest, the gate is opened. Water rushes out and the fish get caught in the net. These are then collected, boiled and processed. Most of it is exported.

The coconut trees on the bund yield well. But the nuts are small in size. Once in two years, river sand is placed around each tree. Nuts are gathered ten times a year.

The following figures are taken from the farm accounts of a typical, orthodox farmer, who owns six acres. He gets about 10,000 pounds of paddy valued at 3,000 rupees. The income from the 7,000 coconuts, he gets each year, is about Rs. 1,000. He does not like to attend to the fish-farm and so rents out the field to contractors during that season (November to May). The contractors pay him 1,000 rupees. Of course, if the farmer himself attends to the fish-farm, he could get a sum much more than this amount. Thus, the total income of the farmer from the three sources comes to 5,000 rupees. He never spends more than 500 rupees a year. This includes hired labour for preparing the field, strengthening the bunds, collecting coconuts etc. This works out to a clean profit of at least Rs. 4,500 a year. Not so bad when one remembers that he need not own bullocks for the plough, or spend anything on manure, insecticides, etc! Moreover, he has about six months of leisure during the year, which he can utilize in some other side-line.



WITH the coming of summer, poultry farmers face the usual problem of low egg production in their flocks.

Birds hatched in January and February start laying by August-September, and continue to lay well through the

YOU SHOULD GET MORE EGGS THIS SUMMER

By S.G. IYER

winter months. When the summer comes, however, the poor producers among them and those which put on fat stop laying. It is only a few that continue laying late.

Similarly, the newly-hatched pullets of the year start laying towards the July end or beginning of August. Hence, there is a gap of poor production between April and July.

Egg production depends on many factors. The breed no doubt is important, but there are other factors such as sunlight, housing, feeding and management which also count. With good feeding and management, egg production can easily be raised from 80 to 90 eggs per year per bird to as many as 200.

FEEDING

To lay well, birds must be given proper feed. Sometimes, one or more essential foodstuffs going into the mash or grain mixture, such as wheat bran and yellow maize, are not available. Then the poultry farmer must find other equally good substitutes, so that the feed given does not turn out to be inferior. If the feed is suddenly changed, birds go off laying. Some of them may even go in for early moulting in summer.

In summer, birds do not eat as much as they do during the rest of the year. If you feed a dry mash during summer, birds will not consume much of it. Hence, sprinkle some water on the mash and mix it well. A wet mash with cooked meat offal is a very good feed. You can add the meat offal to dry mash also for feeding birds at about ten in the morning. Provide good quality limestone grit containing 98 per cent calcium carbonate.

MANAGEMENT

From the middle of March in north India, the summer season starts Temperatures are high during April, May and June. It is during this period that the poultry farmers should be very careful. It is usual to see birds standing with the wings spread and beaks open and often panting This is a sign of the bird trying to keep itself comfortable in the heat. The poultry bird has a high body temperature. It has no sweat glands. Hence, it is necessary to protect it from the extreme heat.

If poultry houses are of angle iron bars covered with wire netting, it is easy to keep the house cool if a large *bhurra* grass *chupper* is put over the roof. The windscreen must be strong enough to break off the hot westerly winds. It is also good to sprinkle water over the screen and splash water frequently in the pit as well. Some poultry keepers even sprinkle a little water over the birds. All these will help keep the birds cool. It is a good practice to have shade trees such as the mulberry. For a pen of 100 feet x 100 feet, eight such trees will be found sufficient. These trees, if pruned early in October-November, put on a thick foliage in next March.

In summer, enough number of nest boxes should be provided not only in the pen, but also outside it. If the poultry keeper provides trapnesting, he should see that the birds are released as early as possible after laying, as otherwise it is likely that the eggs will be broken.

During summer, provide also more hopper space to each bird. Also provide cool, clean and fresh drinking water. Change water every four hours during the day. Good quality limestone grit is very necessary to be given for better egg production.

BROODY BIRDS

Broodiness in birds is useful for hatching eggs. But the broodiness is also a handicap. When a bird goes broody, she produces eggs with a small and shrunken yoke. You can break the broodiness in birds, and make them lay well, if you confine such birds, once they stop laying, in special broody coops with a slatted floor through which cool air can circulate. This way, a bird gets over its broodiness in a week or so. If you feed such birds with a diet rich in protein such as a wet mash, it will help the birds start laying early.

In the hot weather, laying birds commonly get diseases, and many of them die off, or lay poorly as a result. Fowl cholera and fowl pox are two of the common diseases. Birds may also get heat strokes and similar other ailments.

(*Please turn to page 19*)

It was lindane that made all the difference. The sugarcane on the left did not receive lindane treatment, while the crop on the right did

WHAT **LINDANE** CAN DO TO **SUGARCANE**

IN one of the fields at the Sugarcane Research Station, Jullundur, Punjab, a visitor can see some rows of cane, growing very much better than in the neighbouring rows.

The canes were healthy and tall, with a large number of stout canes growing closed together. In the rows on the left, the canes were all short and thin and gappy, with many 'dead hearts' or dead central shoots.

Looking at the good canes, you would think that they came from more vigorous-growing variety, which received heavy manure. But, on an enquiry you would find you were wrong. All the rows in the field and the next were of the same variety, and received the same dose of fertilizers.

A chemical, called lindane, that was applied to the one set, protected the canes against white ants and shoot borers. Lindane, a purer form of BHC, was sprayed on the cane setts when they were planted, whereas the cane rows on the left side were not lindane treated.

Lindane is a powerful insecticide. It is effective against both termites and white ants and shoot borers of young cane. White ants do a lot of damage to the tender sugarcane buds. Sometimes they destroy as many as 40 to 60 per cent of the eyebuds. Lindane protects the buds, and gives almost every mature bud a chance to germinate and grow into a cane.

Shoot borers too are very fond of young sugarcane. They bore into them and kill the growing shoot. The canes develop a 'dead heart.' In some cases, nearly 30 to 50 per cent of sugarcane tillers are killed by these borers. Because lindane effectively destroys the borers, the canes put forth a good number of tillers which grow into fine juicy canes.

In an experiment in Uttar Pradesh the number of tillers in a lindane-treated plot was 96,700 per acre as against only 40,100 in the plot that did not receive lindane. Such is the protection that lindane gives to cane.

Lindane also is seen to help canes grow. Farmers in the Punjab who used lindane even call it a fertilizer! In trials conducted at Rosa (Shahjahanpur, Uttar Pradesh) in 1958, the sugarcane yield from plots that received lindane was as high as 1,032 maunds per acre as against 362 maunds from the plot that did not receive it. The average height of the cane in the first was 7½ feet, while in the second, it was only 3¾ feet.

Lindane-sprayed canes are also found to be richer in sugar content.

You require half a gallon of the chemical, costing about 30 to 33 rupees, to protect an acre of sugarcane but you will get it all back many times over because of the better sugarcane and the higher yield it will produce. In the Punjab, some sugarcane societies and factories help farmers meet a part of the cost of the chemical.

You get lindane in the form of an emulsion. Take half a gallon of this liquid and mix it with 160 gallons (40 kerosene tinfuls) of water. After you spread the cane setts in the furrows before planting, spray this mixture on the setts with the rose can.

This lindane spray will effectively protect your sugarcane against white ants and shoot borers, and give you more and better sugarcane. Try it this year.

Growing

KAGZI LIME

By L. VENKATARATNAM

KAGZI lime is a fruit that is growing more and more popular with fruit-growers as well as kitchen gardeners. To raise a good crop of *kagzi* lime, you will have to pay attention to where and how you grow it.

WHERE TO GROW

Soils which are six feet deep having silt or medium black loams are the best for growing *kagzi*. Loose, fine-textured red soils come next in preference. The soil should be able to hold moisture and should be well-drained. Avoid heavy clay soils for *kagzi*.

VARIETIES TO GROW

The thin-skinned round *kagzi* lime (*Pulla nimbu*) of Kodur (Andhra Pradesh) is the popular variety to grow in south India. This variety is juicy and yields 1,500 to 2,000 fruits a year per tree. The Rajamundri lime produces only 500 to 600 fruits per year. But the limes are big-sized.

HOW TO PLANT

First provide a shelter-belt for the plants. Use *shisham*, *Casuarina*, *Glyricidia* or any other shade plant for the purpose.

Mark three feet by three feet squares at every 18 to 24 feet (each way). Dig three feet deep pits at these places.

Fill each of these pits with 20 to 25 baskets of cattle manure and six seers of powdered castor or *neem* or groundnut cake, and three seers of fish-meal. Put in two to three baskets of river silt, if available, or else apply top-soil. Plant one-year-old *kagzi* lime seedlings which are two feet high. Two-year-old lime seedlings can also be planted. Avoid planting budded plants obtained from areas known to have virus-affected plants.

Plant in June-July or November-December. Plant seedlings with a ball of earth, at the centre of each pit. Press the soil firmly round each plant with the feet. Check and see that all the plants are in straight lines either way.

Your seedlings will grow slow in the first five years, but will give you the same results afterwards as budded plants do. Of course, budded plants start yielding two years earlier than the seedlings. Till they start yielding, grow *dhaincha*, sannhemp, green-gram (*moong*), groundnut and vegetables as intercrops. You can also grow turmeric, ginger or onion, but not rice, *jowar* or cotton, as they may shade the fruit plants.

In June, plough the orchard with an iron plough and sow sannhemp or *dhaincha*. Plough the crop down after six to eight weeks of growth. In July and December, apply the manure to each plant by digging three to four inches deep around them. The manure you apply per plant should be 10 baskets of cattle manure, 3 kilograms of groundnut or castor cake, 1½ kilograms of superphosphate and 1⅛ kilograms of ammonium sulphate. Irrigate immediately after manuring.

Apply this dose during the first five years ; from the sixth year onwards, increase it by a fourth every year.

HOW TO IRRIGATE

Irrigate lime at one-acre-inch per irrigation. Apply the water once in five or seven days in square basins around the plants. Do not allow the water to come in contact with the stem, by rolling up soil a foot away from the plant to form a circular mound. Every year, increase the basin by one foot and reform the mound of earth one inch higher. During the rains, drain all the extra water. Do not use salt water for irrigation.

HOW TO PRUNE

Avoid severe prunning. In the early stages, let a single stem grow with branches going upright. A year after planting, trim the low hanging branches and keep the same clear to a foot from the ground level. In this area, remove any sprouts that may come up.

(Please turn to page 25)

An implement which strains the animals is a bad selection

Suit the implement to the bullock—so that both the animal and the implement work efficiently

HOW TO SELECT THE RIGHT IMPLEMENT

for your farm

By K. S. YADAV

FARMERS often complain that when they use an improved agricultural implement like a mould-board plough or cultivator, the working life of the bullocks is shortened. This is true in cases where no thought was paid by the Extension worker or the farmer in selecting an improved implement after paying attention to its suitability to the animals the farmer has and the soil condition in which it is worked.

It is necessary that Extension workers, agricultural officers, farmers and village artisans know the various things to be considered before a new improved implement is purchased or introduced in the area.

First, they should know how to find out the pulling capacity of the bullocks or animals yoked to the new implement. This capacity is found out from the formula that an animal can exert a normal pull of 1/10 to 1/8 of its body-weight for a normal load for 8 hours per working day with rest inbetween. If an animal has a body-weight of 800 pounds, for example, it can take a draft (or pull) of 80 to 100 pounds only. Hence, a pair of bullocks with such a body-weight can take a draft of 160 to 200 pounds. Therefore the implement you select for use with these bullocks should not have a draft of more than 160 to 200 pounds. If it is more, the bullocks may still work the implement, but their general health and working capacity will suffer in the long run. To measure the draft, an instrument called a spring-type dynamometer can be used.

All soils offer resistance to the working of an implement, the resistance depending upon the kind of soil. The soil resistance or draft is the force required to shear and pulverise one square inch of the furrow cross section from the parent material. Generally, this varies between 3 and 12 pounds per square inch. The draft of the plough per square inch of furrow cross section for various soil types, generally speaking, is as given below.

Type of soil	*Pounds of draft per square inch*
Sandy	3 pounds
Sandy loam	3 to 6 pounds
Silt loam	5 to 7 pounds
Clay loam	6 to 8 pounds
Heavy clay	7 to 12 pounds

The above shows that the draft of the plough varies directly according to the depth and width of the furrow. Experiments have shown that in a plough draft made by cutting the furrow slice, independent of turning, 45 per cent of the total draft was used in cutting the furrow slice and 34 per cent of the draft in turning the furrow slice. Another 21 per cent was used in moving the plough.

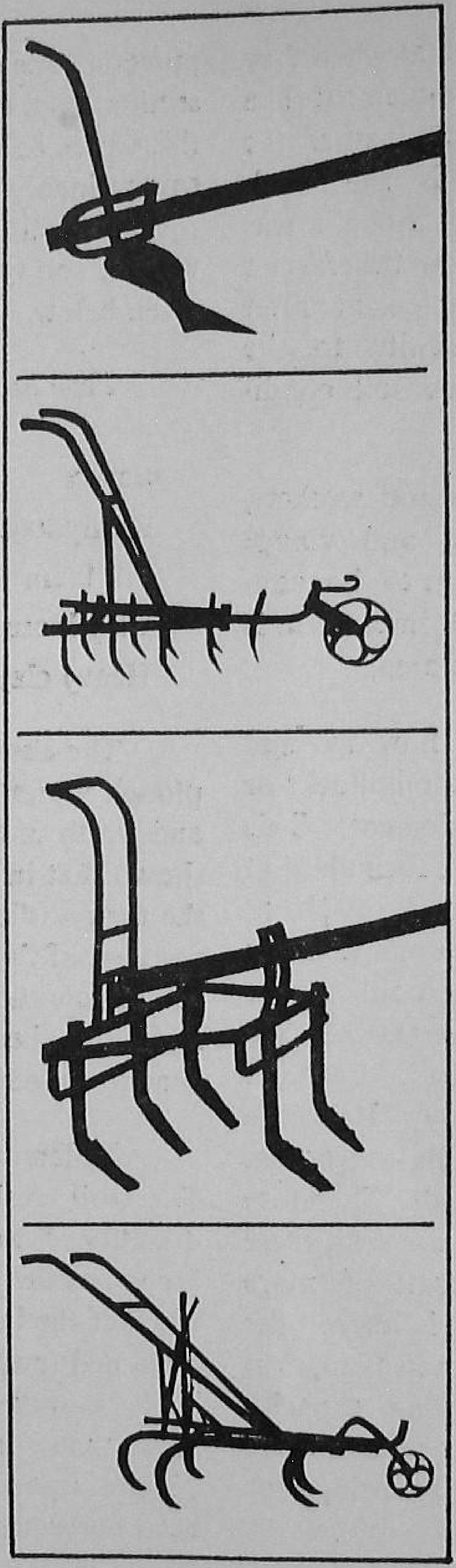
Different soils have different drafts. The soil resistance also depends on the quantity of weeds in the field. If the weeds are more, the draft increases. This is true whether the land is a ploughed or an unploughed one. The draft of the ploughed land, however, is smaller than that of the unploughed land. Soil resistance will also depend upon the previous crop which has been harvested from the field.

The farmer should also know how deep he has to prepare the seed-bed or the field. Then he should find out the furrow section which he wants the implement

to make. He can then calculate the area of the soil to be stirred.

There are two types of furrow sections which implements can make; rectangular and triangular. The rectangular type is the one which all soil-inverting ploughs make. The area of this section can be calculated by the size of the share of the furrow width in inches multiplied by the depth of furrow in inches. This again should be multiplied by the approximate soil resistance, so that the total draft of the implement can be worked out.

If the furrow section is triangular as is made by the *desi* plough or other implements like cultivators, you can calculate the area of the furrow slice by half the base into altitude (height). This means you multiply half the width of the furrow on the ground surface by the depth of the furrow. This area multiplied by the soil draft will give you the total draft of the implements. This will be for one furrow. If the implement makes more than one furrow, multiply by the number of furrow openings to know the total draft of the implement.



Such bullock-drawn improved implements are good only when they are properly chosen

This approximate draft should be less than the pulling capacity of the bullocks. Hence, select the size and type of the implement only after knowing the source of power that is to operate it.

One cannot ask farmers in West Bengal, Orissa, and Assam to use the Victory plough or the Punjab plough. This is because the bullocks in these areas are short and may not weigh more than 500 pounds each. A pair of such bullocks can exert a pull of only about 100 pounds. Hence, heavy implement should not be matched with these bullocks. Only very small type of ploughs and implements, having no more than 100 pounds draft are suited for such animals.

Extension workers who have to demonstrate and popularise the right type of implements, and farmers who want to purchase and use such implements should, therefore, consider these factors before they go in for improved implements.

No jassid trouble if you

SOW YOUR COTTON EARLY

JASSIDS, a pest that reduces long-staple cotton yields, are a worry to farmers in the Punjab. Agricultural experts now say that the jassid trouble can be easily reduced if farmers sow their cotton early.

Early sowings also help you in other ways.

An early-sown cotton gets a better start. You will have time enough to give one or two interculturings before the monsoon sets in. These interculturings will keep down the weeds and push up the growth of cotton plants.

The early-sown cotton gives you more cotton per pound of fertilizers added to the soil. It uses up the nitrogen you supply through the fertilizers better than the late-sown crop.

The early-sown cotton will be healthier than a later-sown crop. Leaf rollers do less damage when cotton is sown early.

If you are in the Abohar region, sow your cotton any day during May, but if you are in the Jullundur region, you should start sowing from the second week of April and complete it by the second week of May. In the Hissar region, the best time to sow cotton is between the second week of April and the first week of May.

If you have to delay the sowing, sow the seeds in rows two feet instead of two and half feet apart which is the correct spacing for an early-sown crop. Whether early or late, keep the distance between plants in the row at one foot.

The cotton crop grows better if your field is green manured with *guar* or gram or any other legume. Apply, if possible, eight to ten cartloads of well-rotted cattle manure for each acre.

Sowing mixed and impure seed is banned in the Punjab. You should obtain quality seed in sealed bags from the Agricultural Department. By sowing such seed, you can keep your cotton pure and uniform. Remember, a pure and uniform quality cotton brings you more money per maund. Eight seers of good seed are enough to sow an acre. You may increase the seed-rate by another two seers if your sowings are delayed.

Soak the seeds for five to six hours in water before sowing. This will help the seeds to germinate better.

Rub the soaked seed with sand at the time of sowing. This enables the seed to pass through the drill smoothly and helps you sow the crop uniformly in the field.

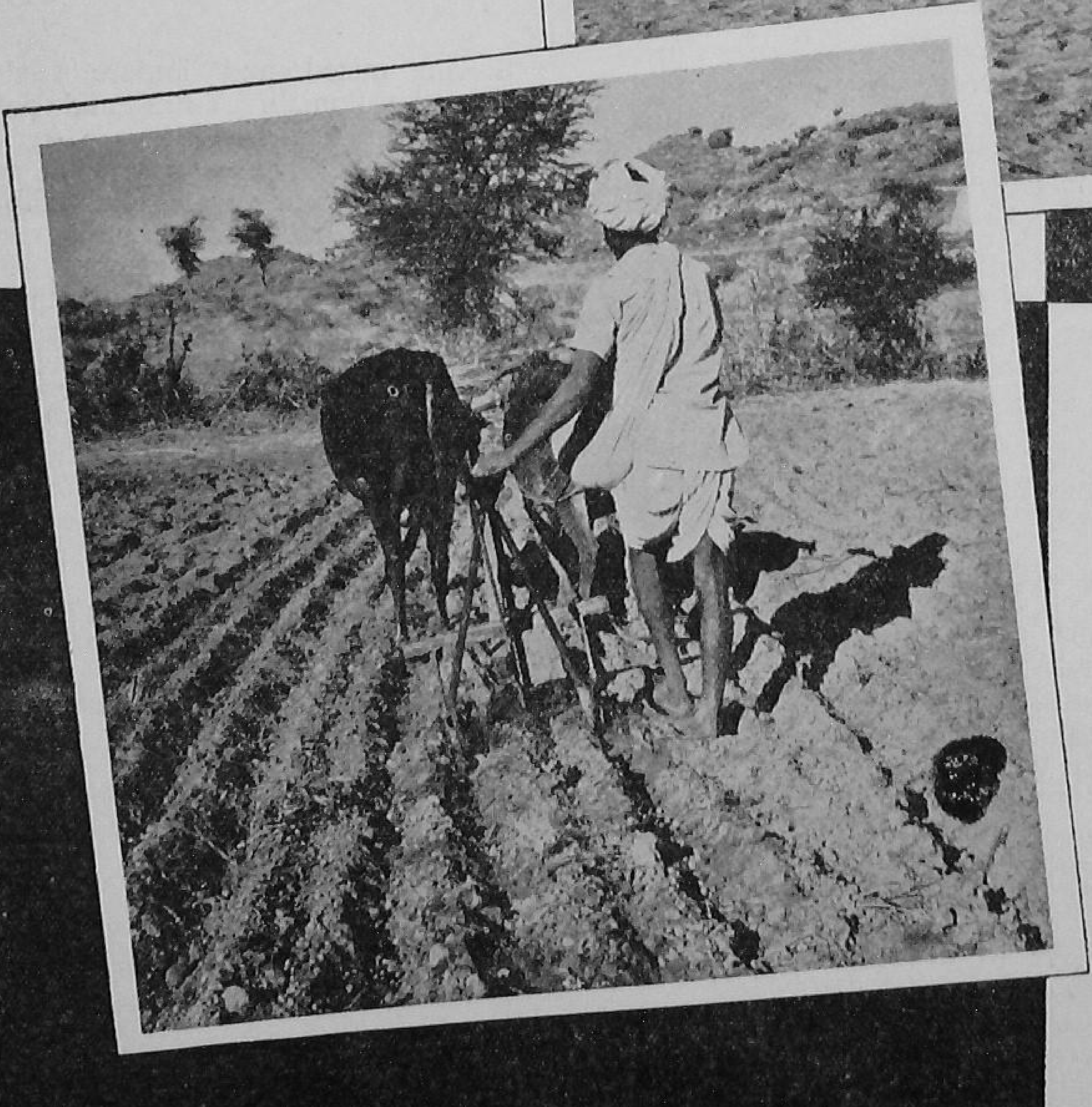
Use the single-row cotton drill for sowing. The work will be cheaper, faster and more efficient.

If you are sowing *LL 54* variety of cotton, treat the seed with 'Ceresan' or 'Agrosan GN.' You require half a *chhatak* of it to treat eight seers of seed.

Special Farm Feature

Farmers in Pali are now happy as they are able to harvest bumper crops and at the same time get good price for their produce through cooperative marketing societies established under the Programme. Picture shows chillies being weighed in the chilli-drying yard of a marketing society.

Many Pali cultivators have taken to improved implements. Here a farmer is seen using a three-tined seed-drill.



More and more farmers are using fertilizers, as they are now liberally available. Picture shows a Pali cultivator applying ammonium sulphate to his wheat crop.

PALI'S PROGRAMME

A year of intensive efforts towards increased production

THE day dawns in Pali District in Rajasthan the same way as it has been all these years. But to the Extension Officer Jagdish Vyas, a new day means a challenge to do more work with farmers, assisting them in drawing up plans for better farming and helping them implement the plans.

Vyas, like 40 other Agricultural Extension Officers in the District, since about a

Potato—a new introduction in the area—has evoked lot of interest among Pali farmers.

year, is leading a new way of life. He lives in Bar village in Raipur Panchayat Samiti area, instead of at the Samiti Headquarters, from the time the Intensive Agricultural District Programme was launched in Pali.

Pali is one of the seven districts in the country where this Programme, popularly called the 'Package Programme', is at present being implemented. The Programme aims at a rapid increase in food production in selected areas by providing farmers with all the requisites of production in the quantities needed and at the proper time.

The idea behind Vyas preferring to live in Bar village is that he can get better acquainted with Bar farmers, understand their day-to-day problems and be immediately available when they need his help. This way, he has been able to identify himself with the farmers and influence them into taking up the 'package of improved farm practices.'

Vyas has another challenge to meet. He has to practise what he preaches. If he advises and induces farmers to introduce improved practices, he has himself to follow these practices in a portion of a field belonging to a farmer in Bar. The farmers can be easily converted in favour of the better practices if the yields he gets are better than what the farmers harvest.

In Pali, the accent is on providing the farmers with the factors which make for better farm yields. Speedy action is being taken to see that every farmer gets for sowing, the improved seed which is the basic need for raising a better crop, whatever the crop is. In the last *kharif*, over 9,000 maunds of improved seed of *jowar*, maize, cotton, *bajra*, and sesamum were distributed to farmers. To speed up improved seed production, two large seed multiplication farms have been set up and one more is planned.

Pali farmers, especially those in the rainfed areas, were not fertilizer-conscious. Last *kharif*, they had their first introduction to fertilizers, when they used 700 tons of ammonium sulphate and 300 tons of superphosphate. Yield-increases showed them what they had lost all these years. During

Composite demonstrations influenced many a farmer take to better farming methods

rabi, Package Programme officials doubled the fertilizer supplies, and found that there was demand for more.

In farmer Dhaglu's words, "For the first time this year I used fertilizer in the full dose recommended for my chilli crop. Inspite of heavy rains at the wrong time, I got 15 per cent more yield. I am now all for fertilizers."

Better farming has to go hand in hand with better implements. Extension workers are showing farmers the use of medium and light soil-turning ploughs, bund-formers, *triphalis* improved-hand hoes, bar harrows, *bakhars*, soil-scrapers, three-tined cultivators-cum-seed-drills, etc. Nearly 1,500 of these implements are being worked in the fields for educating farmers in the use of such implements. The Package Programme officials are encouraging village artisans to manufacture and sell them to farmers by subsidising their cost.

Easy credit, which was for decades one great unsatisfied need of the farmer, is being

Though a new crop in the area, the potato gets the full attention it deserves

satisfactorily solved. Short-term loans, amounting to 10½ lakhs of rupees were disbursed to Pali farmers through cooperatives. The cooperative societies are being strengthened, and in the last one year, 400 new primary agricultural credit societies have come into being. Membership to the societies as a result of intensive work, has increased four fold in the last twelve months !

The credit needs of farmers are based on what they propose to do on their farms. For this purpose, each farmer is assisted by the Programme staff to draw up a farm production plan. Last year, 7,000 farm plans were ready; in the coming year, this number will be more than doubled.

Education to be effective among farmers has to be visual. A field demonstration is one way of showing farmers what they should do and how. In Pali today, farmers are closely watching over 525 demonstrations conducted by the Extension people. When the fields are harvested, farmers will see for themselves what it means to take up the better farming practices.

Typical among the new converts to better practices is farmer Gopuji. He is the one that doubted whether it was worthwhile to accept a new idea. A close watch of the demonstration plot in his own field has now convinced him that improved practices alone can deliver the goods for himself and all other farmers of Pali.

It is a year now since the Package Programme came to Pali. Pali has another four years to give a tuller account of how it has made use of its potentialities and its resources to raise the standard of agriculture to a high level.

GET MORE EGGS THIS SUMMER

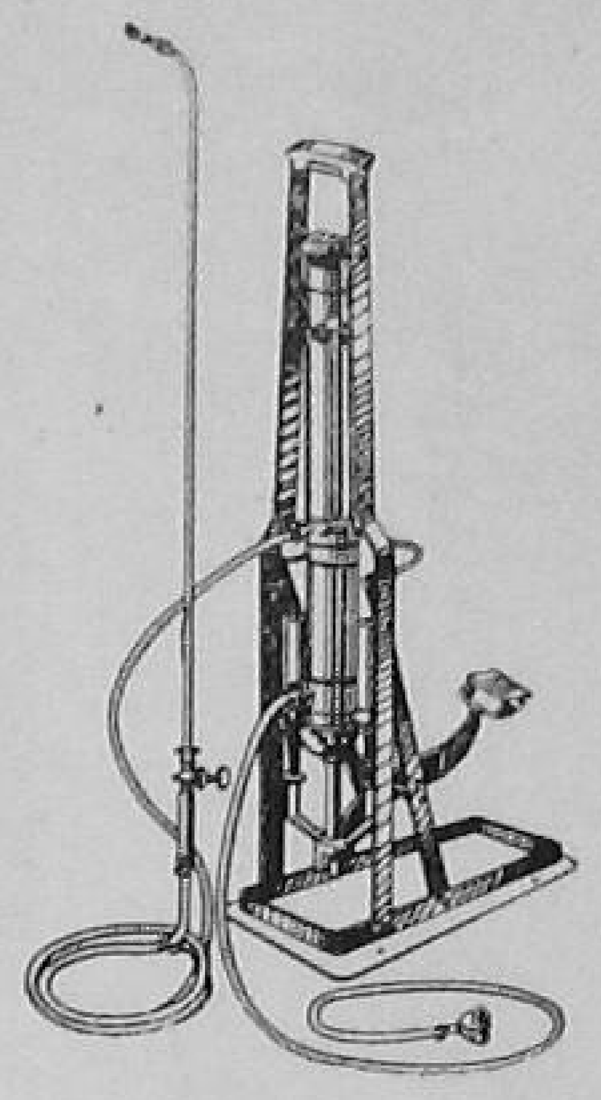
(*Contd. from page 5*)

When birds are confined or overcrowded, the worm trouble also starts. This is more so during summer. The poultry keeper would do well to get the necessary help from the nearest veterinary hospital in such cases. The birds should also be treated with DDT for lice. The poultry keeper should do everything to see that he maintains good sanitation.

To get equally good production in summer as in winter, it is good to hatch late in the season—March-April—when the eggs are in plenty, and also setting eggs in August to October. Egg laying of birds hatched in January and February drops to 30 per cent or less in the next May-June, while the late hatched onces will be in high production during this period. The early hatched birds of September-November come into lay next March-April, and will maintain good laying all through the summer.

With proper housing and management and an eye on diseases, poultry keepers can easily maintain good egg production in their flocks even during summer.

ENSURE IMMUNITY FROM INSECT PESTS SPRAY WITH



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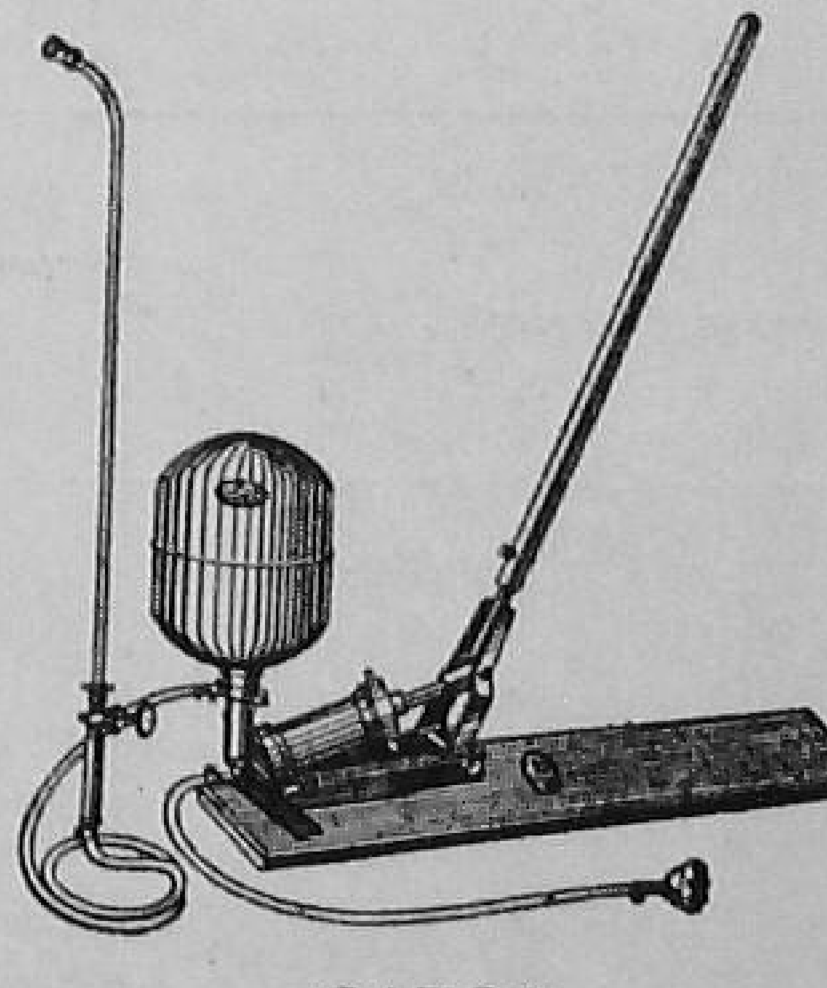

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The Punjab Farmer's FERTILIZER GUIDE

Fertilizers are to be used in a proper way and in time. Here is a guide that Punjab farmers can follow with profit.

Region/District	Dose in pounds/acre N	P_2O_5	K	Time and method of application	Remarks
				WHEAT	
Hoshiarpur, Gurdaspur, Ambala, Patiala, Kapurthala, Ludhiana, Jullundur and Hissar	40	20	20	Half N and whole of P and K by drilling at sowing and the remaining half of N by broadcast with first irrigation.	(a) For soils with *p*H less than 6, liming at 400 to 1,100 pounds per acre depending upon *p*H and texture is necessary. (b) Application of P and K where they are not mentioned may be made if so indicated by soil tests. (c) For *C 273*, application of K is essential.
Kangra	40	40	40	-do-	
Amritsar, Karnal, Bhatinda	40	20	—	Apply half N and whole of P by drilling at sowing and the remaining N with first irrigation.	
Remaining districts	40	—	—	Either drill the entire quantity at sowing or broadcast with first irrigation.	
				BARLEY	
South-eastern districts	25	—	—	Broadcast or drill at sowing	

Region/Disirict	Dose in pounds/acre N	P_2O_5	K	Time and method of application	Remarks
				MAIZE (LOCAL)	
Kangra	50	50	50	* Apply half N and whole of P and K by drilling at sowing. Apply rest of N in bands or side-dress with first irrigation.	(a) Liming is recommended when soil *p*H is below 6.
Gurdaspur, Hoshiarpur, Patiala	50	25	25		
Ludhiana, Jullundur	50	25	—		
Remaining districts	50	—	—	Either drill at sowing or apply in bands or side-dress with first irrigation.	(b) Application of P and K, where not mentioned may be made if so indicated by soil tests.
				MAIZE (HYBRID)	
All districts	100	50	50	Apply as in * above.	(c) Dose of N may be reduced to half if maize follows berseem.
				PADDY	
Gurdaspur, Karnal, Ferozepur, Patiala	40	20	20	N and K to be applied 3 weeks after transplanting and P may be drilled before flooding. N may preferably be split up in two doses, half 3 weeks and the rest 6 weeks after transplanting.	Higher dose is necessary for finer varieties.
				COTTON	
Hansi and Abohar	80 to 120	—	—	Apply half N at thinning, by drilling on both sides and the other half at pre-flowering on both sides of the row by top-dressing.	(a) If cotton follows berseem, the dose of N may be reduced.
Amritsar, Jullundur, Hoshiarpur and Gurdaspur	40	—	—	do.	(b) P and K may be applied where indicated by soil tests.
Other cotton-growing areas	50 to 60	—	—	do.	
				SUGARCANE (PLANTED)	
Jullundur, Hoshiarpur, Patiala, Karnal, Ambala (Jagadhri type II soils) and Kapurthala (Phagwara type III soils)	60 plus 40 to 80 pounds nitrogen as top-dressing.	30	30	Apply fertilizer-mixture by drilling at sowing and the rest of nitrogen as top-dressing in June.	

Region/District	Dose in pounds/acre N	P_2O_5	K	Time and method of application	Remarks
				SUGARCANE (RATOON)	
do	60 plus 80 pounds nitrogen as top-dressing.	30	30	Apply fertilizer-mixture with first ploughing in February or after harvest by drilling and rest of nitrogen by top-dressing in June.	
				SUGARCANE (PLANTED)	
For all other districts	100	—	—	Apply in two doses, half at sowing and half before the onset of rains.	(a) P and K where not recommended may be applied if indicated by soil tests.
				SUGARCANE (RATOON)	
do	140	—	—	do.	(b) Increased dose of nitrogen may be useful in very poor soils.
				POTATO	
Palampur	100	100	200	Apply fertilizers by drilling at sowing.	Spray with zinc sulphate (0.5 per cent) solution also.
				POTATO	
All other districts	50 plus 50 pounds nitrogen.	50	50	Mixture to be applied at sowing and nitrogen by top-dressing at earthing up.	
				TOBACCO	
All the districts	75	—	—	To be applied in split doses, half at transplanting and the other half one month after.	Nitrate should be preferred.
				GRAM	
All the districts	—	30 to 60	—	To be drilled before sowing.	
				BAJRA	
do.	30	—	—	Drill half the dose at sowing and the other half one and a half months after sowing at the time of irrigation. Under *barani* conditions, half the dose may be applied with the first shower of rain.	

Region/District	Dose in pounds/acre N	P_2O_5	K	Time and method of application	Remarks
				BERSEEM	
Gurdaspur	50	100	—	Apply by broadcasting before sowing.	
All other districts	25	50 to 100	—		
				SUDAN GRASS	
All the districts	50	—	—	Apply half the dose by broadcasting before sowing and the rest after first cutting.	Higher dose of N is also economical.
				JOWAR (FOR FODDER)	
All the districts	30	—	—	Broadcast at sowing.	do.
				SWEET POTATO, CARROT, BRINJAL	
For all the districts	50	—	—	To be applied at sowing.	P and K may be applied when indicated by the soil test.
				ONIONS, TOMATOES, CAULIFLOWER, CABBAGE, COLOCASIA, PEAS AND CHILLIES	
do	100	—	—	To be applied at sowing.	do.
				OILSEED (SARSON)	
do	30	15	—	To be drilled before sowing.	
				OILSEED (RAI)	
do	50	25	—	do	
				OILSEED (LINSEED)	
do	40 to 50	—	—	do	
				TEA	
do	80 to 120	50	—	To be applied at the end of February or the beginning of March.	

Region/District	Dose in pounds/acre N P_2O_5 K	Time and method of application	Remarks
	CITRUS AND APPLE		
All the districts	1/8 pound N per tree up to 8 years. After 8 years, 1 to 1.5 pounds N per tree.	Apply half the dose in February and the remaining half one month after flowering.	P and K may be applied when indicated by soil tests. Spray with 0.5 per cent zinc sulphate when symptoms of chlorosis appear.

Note :

1. Where N alone has been recommended, application of P and K may be made if indicated by soil tests.
2. In case of crops which usually receive basal dose of farmyard manure, additional application of 1.5 pounds N, 0.5 pound P_2O5 and 1 pound K_2O in inorganic fertilizers per cartload of farmyard manure is desirable.
3. In case of sandy soils, split doses of fertilizers and lighter irrigations are desirable.
4. The dose may be modified according to cultural and other agricultural practices followed and variety of crops sown.
5. In case of saline and akaline soils, reclamation should follow for getting a good stand of crops.
6. For any other information regarding fertilizer recommendations consult Agricultural Chemist, Ludhiana, or Agricultural Inspector of your area.

BETTER FARMING TIPS

TIMELY IRRIGATION MEANS GOOD CANE

TIMELY irrigation to sugarcane means a better crop as well as more sugar recovery. Hence, irrigation is an important operation in sugarcane cultivation.

The following is the irrigation schedule recommended by experts. From planting to the middle of April, the crop should be irrigated every 15 to 20 days, and afterwards up to the onset of the monsoon, every 10 days. During the monsoon, no irrigation is needed, but if there are long dry spells of more than three weeks, irrigation becomes necessary.

In October, irrigation is needed every fortnight and later, till January, every 3 to 4 weeks. In January and February, irrigation helps to save the crop from frost.

The common belief that irrigation in October-November delays the maturity of cane is not true. Experiments have proved that irrigation is helpful in increasing the sugar content in the cane rather than reducing it.

HYBRID COTTON

VERY soon hybrid cotton will be as popular with the farmers as hybrid maize is.

Preliminary experiments have given very good results. Seed which was obtained from a cross between an Indo-American cotton *B.C. 68* and the fine long-linted Sea Island variety *S.I.V. 135* was used for trial in farmers' fields in the Kaira and Mehsana Districts of Gujarat State. The yields obtained were 1,656 pounds and 1,382 pounds of seed cotton, respectively.

Hybrid cotton has a fibre length of 1.24 inches and a spinning capacity of about 80's to 100's and was found as good as Sudan *G. 25* cotton so far as length, fineness and strength were concerned. Quality is so high that traders offered Rs. 2,000 per candy (784 pounds).

Further efforts to improve the quality and also to produce hybrid seed on a large scale are now underway.

GROWING KAGZI LIME

(*Contd. from page 9*)

Shade the newly planted crop with paddy straw or redgram straw. Also, provide a fencing against cattle and goats. Every alternate day, make it a point to remove any black caterpillar with lemon-coloured neck which you see feeding on the leaves. If you see a leaf miner (another caterpillar) which lives inside the leaf spray with fish-oil-rosin-soap (one ounce in a gallon of water) or a *neem* cake decoction. If you see corky brown swellings on the stems, it means the plants are having canker disease. Spray 5:5:50 Bordeaux mixture at 30 gallons (seven kerosene tins) per acre every fortnight during the rains and every month for the rest of the year. Apply Bordeaux paste to the stem at ground level to prevent another disease (gummosis) which causes gum to ooze out from the plants.

Avoid deep digging in summer or exposing of the roots of the plant. Give the trees a rest for a fortnight in May-June and spray Bordeaux mixture once before rains set in.

HOW TO HARVEST

Kagzi lime bears thrice a year. The June-July crop gives better yields than the October-November and March-April ones. Pick the fruits when fully yellow. Store the fruits in a cool place on straw. Lime will keep well for a month if you wrap them in tissue paper.

Kagzi lime has a good demand in the market. An acre of crop easily fetch a thousand rupees a year.

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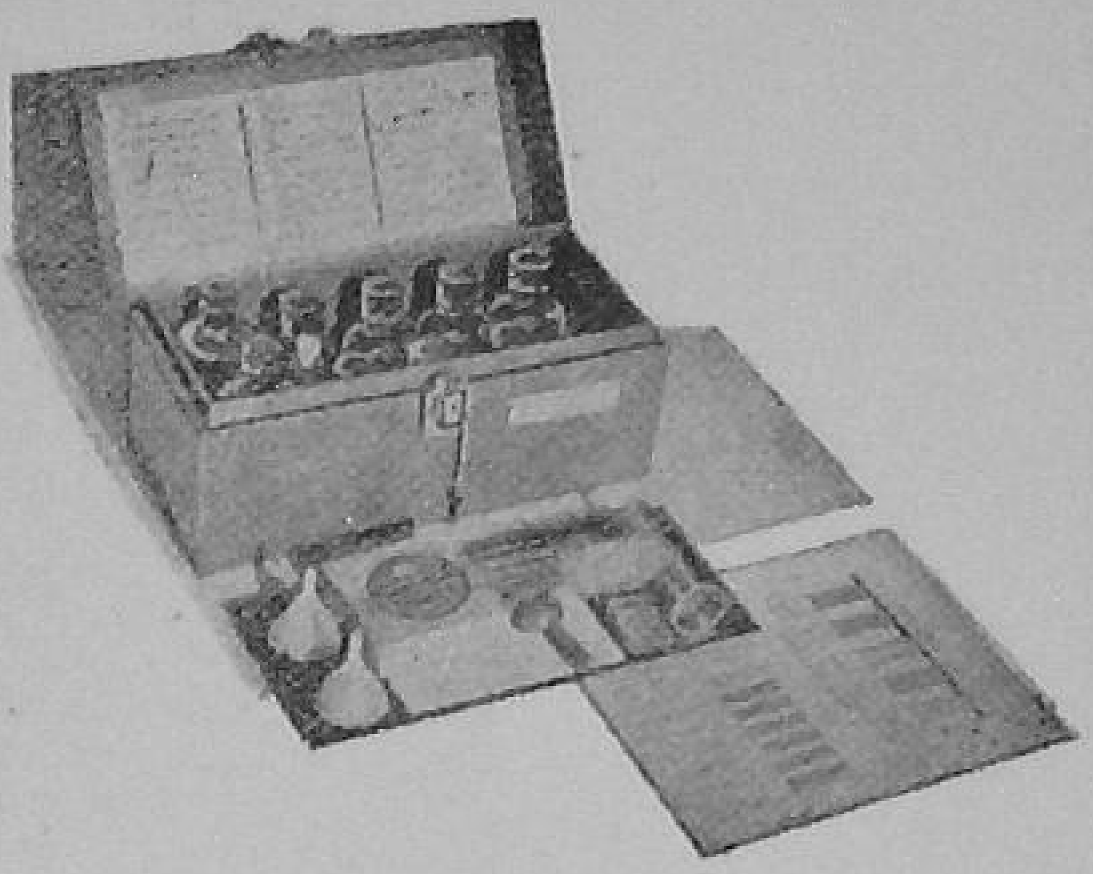

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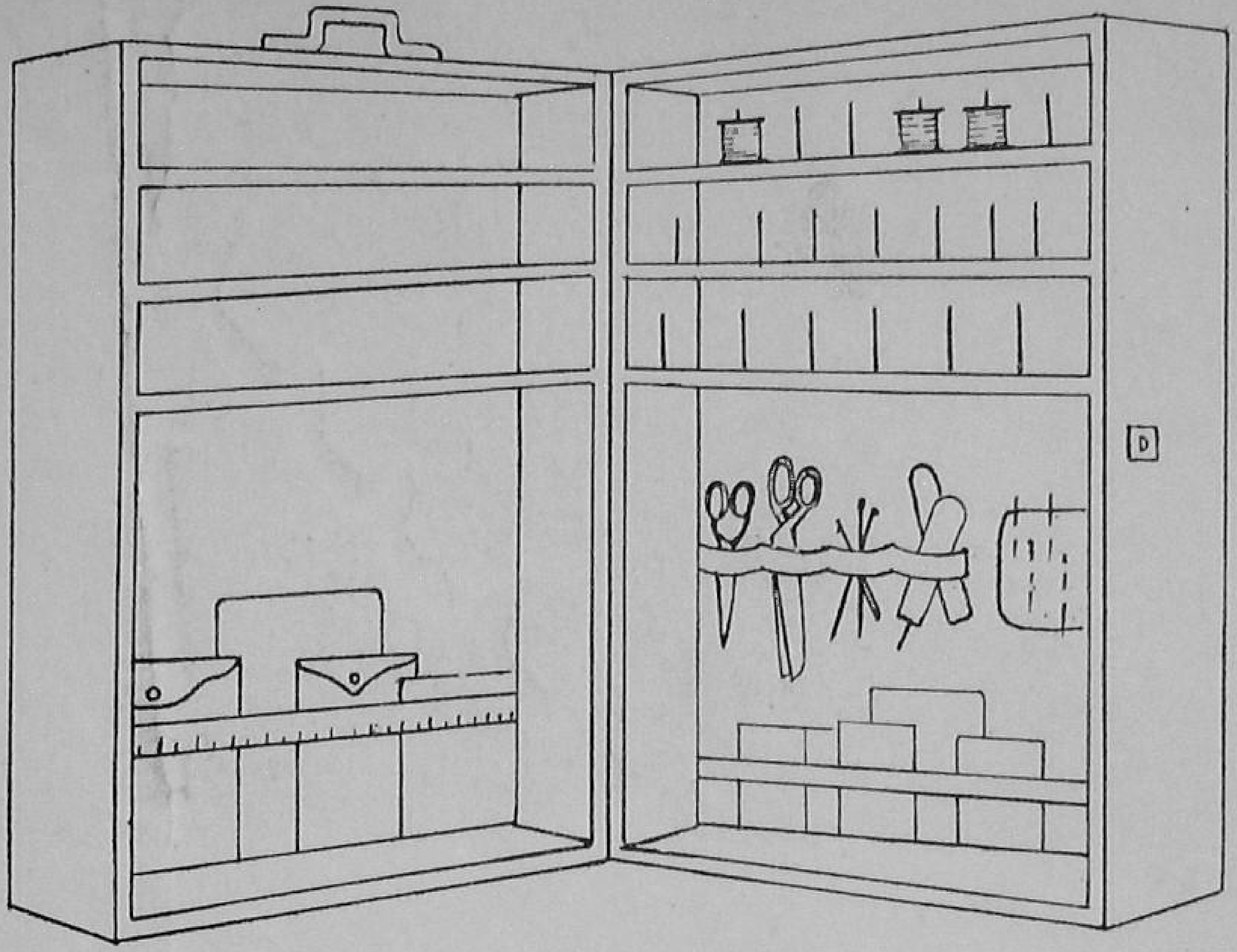
Sewing
IS EASIER THIS WAY

By KAMLESH PURI

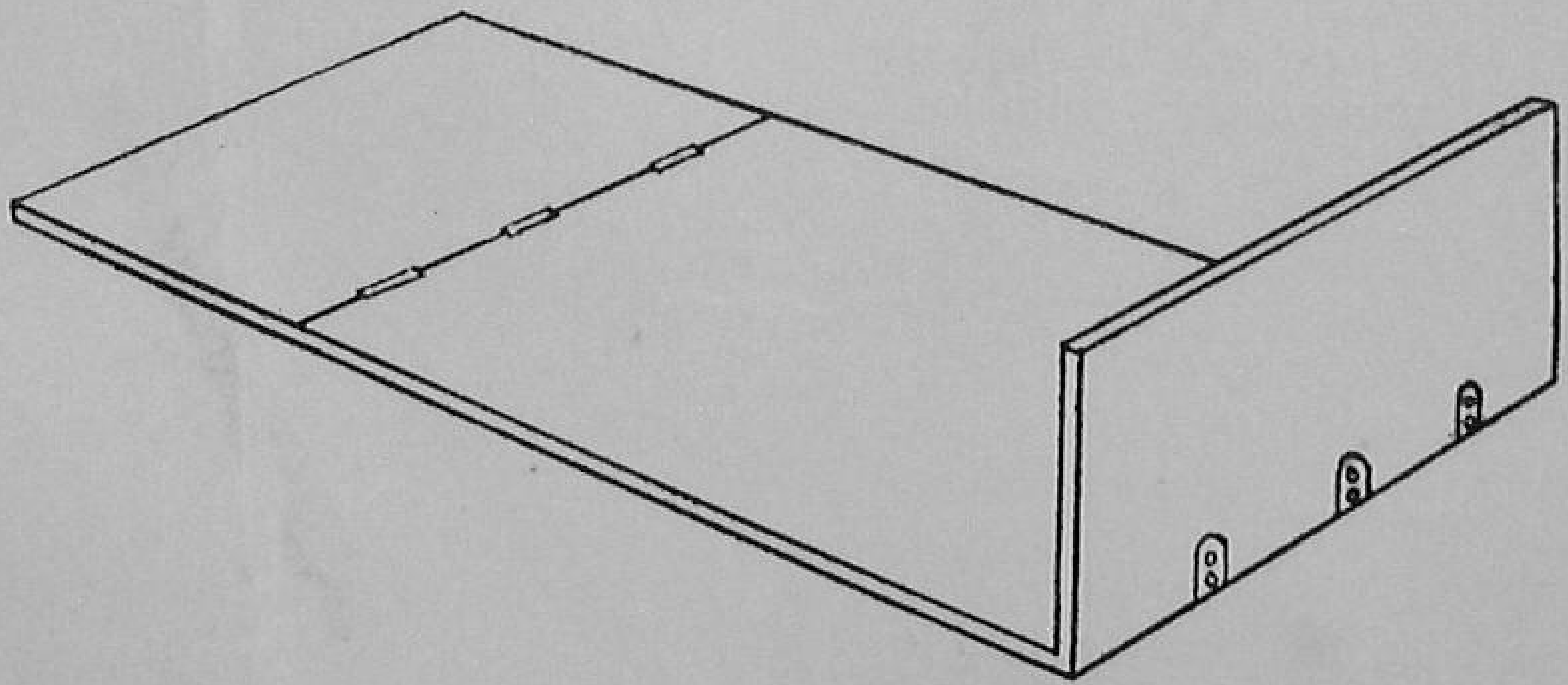
WHETHER you stitch your garments at home or get them stitched by the tailor, there is always a need for home sewing. And home sewing becomes easier if you practise these suggestions.

Think out each step of your work; you will then be sewing faster and easier. Collect all the materials that you will be needing. Draft the pattern to the exact size. This type of planning certainly will save time.

To produce good work, you need good tools. It will not be a help if you have to start looking for thread or needle once you start your work. Hence, have all the small things placed in their proper places in your sewing kit or cabinet, and put them back after use in the right places.



A cabinet to hold all your sewing materials



This folded table will come in handy for cutting out the garments

Among the large equipment you will need, will be the sewing machine itself, a flat surface for cutting out the garments such as a table and an iron.

A spool-holder, whether in the sewing machine drawer or in the sewing kit will keep the coloured threads easily seen and convenient for use. A small cardboard or wooden board with small nails driven into it on the wrong side will also serve the same purpose.

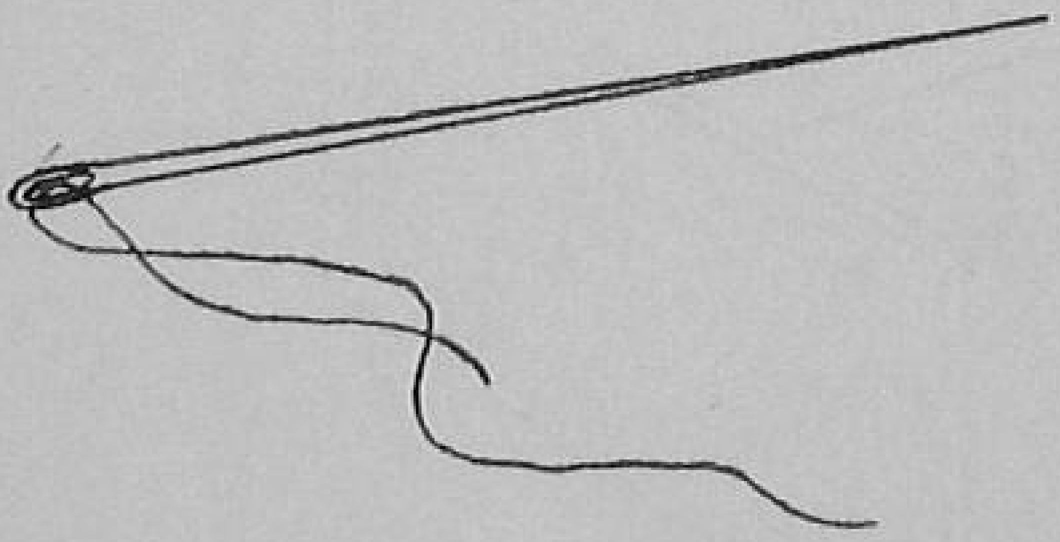
A small piece of magnet will prevent your sewing needles and pins going astray.

Using beeswax on the thread will prevent knotting, and will also make it stronger.

Instead of a cabinet, you can as well use a kit for placing all your things together

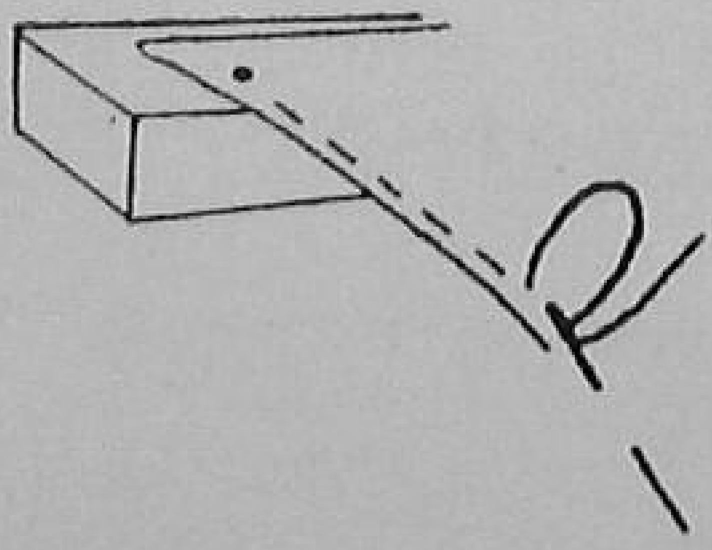
This is particularly helpful when sewing on buttons.

Use needles with long eyes. They are easier to thread. Darning needles with long

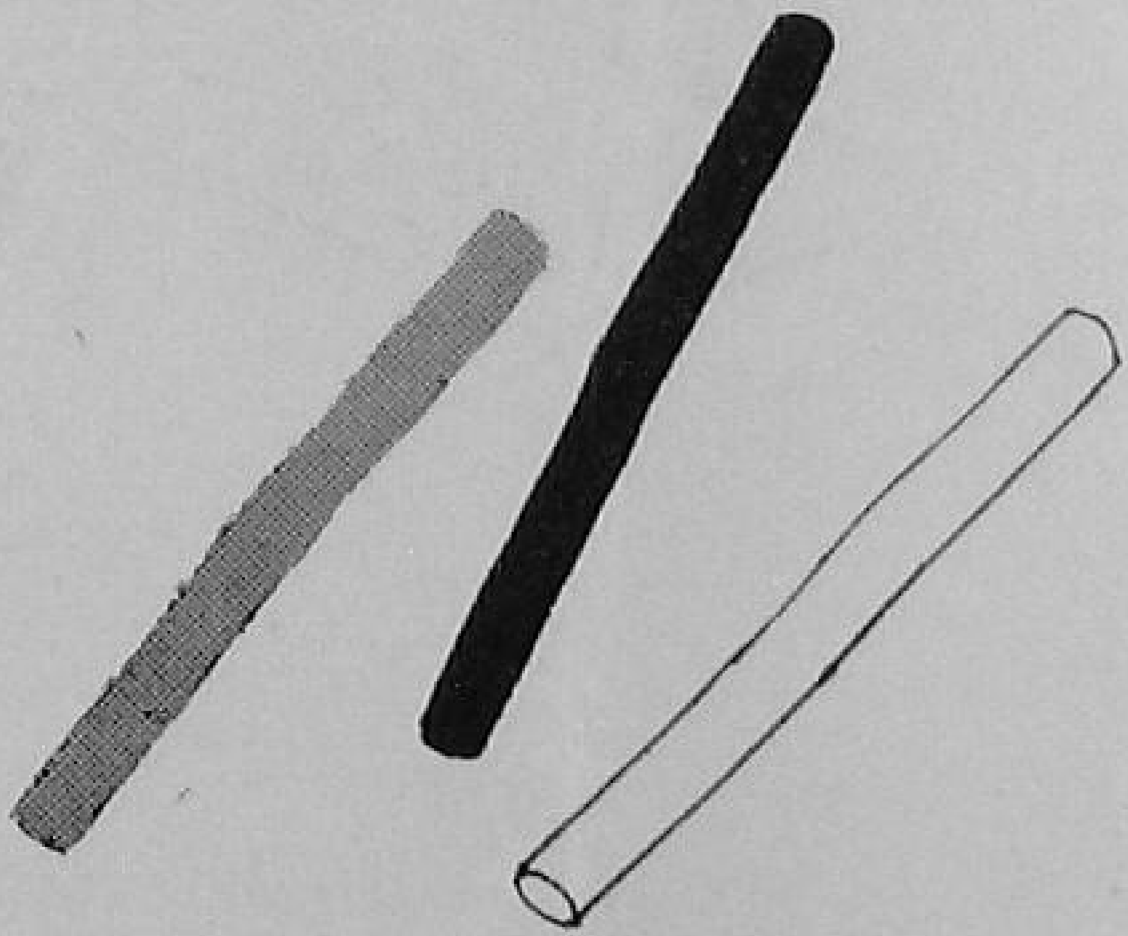


eyes are very suitable for basting and for putting in of the hems.

Make a padded brick for yourself. It



makes basting and ripping much easier. Pad and cover an ordinary brick, and pin the material to it while working. The weight of the brick will hold the material and make the working easier for you.



Ordinary coloured chalks or a tailor's chalk—both light and dark coloured—make marking much easier.

Some fuller's earth or talcum powder will come in handy when you get a stain on your sewing material.

Keep a six-inch ruler and a one-sided razor blade for easy measuring and cutting of paper.

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